

# INTERNATIONAL SEARCH REPORT

Intern. Patent Application No

PCT/IL 00/00158

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 G01N33/92 G01N33/543

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97 27316 A (UNIV CALIFORNIA ; CHARYCH DEBORAH (US); NAGY JOHN (US)) 31 July 1997 (1997-07-31) page 11, line 28-36 page 13, line 5-24 page 5, line 34-37 page 14, line 34 -page 15, line 22 claim 12; figure 1; examples 1,2	1,4-10
X	WO 98 39632 A (UNIV CALIFORNIA) 11 September 1998 (1998-09-11) page 66, line 23 -page 68, line 4	1,5-9

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

**\* Special categories of cited documents :**

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*G\* document member of the same patent family

Date of the actual completion of the international search

25 October 2000

Date of mailing of the international search report

10.01.01

Name and mailing address of the ISA  
European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax (+31-70) 340-3016

Authorized officer

Goetz, M

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IL 00/00158

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-10

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-10

Detection methods wherein the technical contribution resides in:

- the analyte causing a non-chemical change in the polymeric matrix (by using means enabling such change).

2. Claims: 11 - 13

Evaluation methods wherein the technical contribution resides in:

- contacting native peptides and one or more analogues with a biochromatic matrix/lipids and comparing the resulting color change.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IL 00/00158

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9727316	A	31-07-1997	US 6001556 A	14-12-1999
			AU 715973 B	10-02-2000
			AU 1842297 A	20-08-1997
			BR 9707207 A	20-07-1999
			CA 2244098 A	31-07-1997
			EP 0883690 A	16-12-1998
			JP 2000506378 T	30-05-2000
WO 9839632	A	11-09-1998	AU 6343498 A	22-09-1998
			EP 0965033 A	22-12-1999

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Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G01N

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Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97 27316 A (UNIV CALIFORNIA ;CHARYCH DEBORAH (US); NAGY JOHN (US)) 31 July 1997 (1997-07-31) page 11, line 28-36 page 13, line 5-24 page 5, line 34-37 page 14, line 34 -page 15, line 22 claim 12; figure 1; examples 1,2 ---	1,4-10
X	WO 98 39632 A (UNIV CALIFORNIA) 11 September 1998 (1998-09-11) page 66, line 23 -page 68, line 4 -----	1,5-9

☐ Further documents are listed in the continuation of box C.

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- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*G\* document member of the same patent family

Date of the actual completion of the international search

25 October 2000

Date of mailing of the international search report

10.01.01

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Goetz, M

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2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

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1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-10

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-10

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- the analyte causing a non-chemical change in the polymeric matrix (by using means enabling such change).

2. Claims: 11 - 13

Evaluation methods wherein the technical contribution resides in:

- contacting native peptides and one or more analogues with a biochromatic matrix/lipids and comparing the resulting color change.

# INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/IL 00/00158

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9727316 A	31-07-1997	US 6001556 A	14-12-1999
		AU 715973 B	10-02-2000
		AU 1842297 A	20-08-1997
		BR 9707207 A	20-07-1999
		CA 2244098 A	31-07-1997
		EP 0883690 A	16-12-1998
		JP 2000506378 T	30-05-2000
WO 9839632 A	11-09-1998	AU 6343498 A	22-09-1998
		EP 0965033 A	22-12-1999



## PATENT COOPERATION TREATY

PCT

NOTICE INFORMING THE APPLICANT OF THE  
COMMUNICATION OF THE INTERNATIONAL  
APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

From the INTERNATIONAL BUREAU

To:

LUZZATTO, Kfir  
Luzzatto & Luzzatto  
P.O. Box 5352  
84152 Beer-Sheva  
ISRAËL

Date of mailing (day/month/year) 21 September 2000 (21.09.00)		IMPORTANT NOTICE	
Applicant's or agent's file reference 7051/WO/99+			
International application No. PCT/IL00/00158	International filing date (day/month/year) 14 March 2000 (14.03.00)	Priority date (day/month/year) 15 March 1999 (15.03.99)	
Applicant BEN-GURION UNIVERSITY OF THE NEGEV et al			

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:  
AU,DZ,KP,KR,US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:  
AE,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,CA,CH,CN,CR,CU,CZ,DE,DK,DM,EA,EE,EP,ES,FI,GB,GD,  
GE,GH,GM,HR,HU,ID,IL,IN,IS,JP,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MA,MD,MG,MK,MN,MW,MX,  
NO,NZ,OA,PL,PT,RO,RU,SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,TZ,UA,UG,UZ,VN,YU,ZA,ZW  
The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).
3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on  
21 September 2000 (21.09.00) under No. WO-00/55623

**REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)**

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

**REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))**

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. (41-22) 740.14.35	Authorized officer J. Zahra Telephone No. (41-22) 338.83.38
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## PCT REQUEST

Original (for SUBMISSION) - printed on 14.03.2000 05:04:55 PM

0 0-1	For receiving Office use only International Application No.	
0-2	International Filing Date	
0-3	Name of receiving Office and "PCT International Application"	
0-4 0-4-1	Form - PCT/RO/101 PCT Request Prepared using	PCT-EASY Version 2.90 (updated 01.01.2000)
0-5	Petition The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty	
0-6	Receiving Office (specified by the applicant)	Israel Patent Office (RO/IL)
0-7	Applicant's or agent's file reference	7051/WO/99+
I	Title of invention	COLORIMETRIC DETECTION METHOD
II II-1 II-2 II-4 II-5	Applicant This person is: Applicant for Name/ Address:	applicant only all designated States except US BEN-GURION UNIVERSITY OF THE NEGEV Research & Development Authority P.O. Box 653 84105 Beer-Sheva Israel
II-6	State of nationality	IL
II-7	State of residence	IL
III-1 III-1-1 III-1-2 III-1-4 III-1-5	Applicant and/or inventor This person is: Applicant for Name (LAST, First) Address:	applicant and inventor US only JELINEK, Raz 4 Brosh Street 84965 Omer Israel
III-1-6	State of nationality	IL
III-1-7	State of residence	IL

## PCT REQUEST

Original (for SUBMISSION) - printed on 14.03.2000 05:04:55 PM

IV-1	Agent or common representative; or address for correspondence The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:	agent
IV-1-1	Name (LAST, First)	LUZZATTO , Kfir
IV-1-2	Address:	LUZZATTO & LUZZATTO P.O. Box 5352 84152 Beer-Sheva Israel
IV-1-3	Telephone No.	972-7-649-7871
IV-1-4	Facsimile No.	972-7-649-7125
IV-1-5	e-mail	L.L@LUZZATTO.CO.IL
IV-2	Additional agent(s)	additional agent(s) with same address as first named agent
IV-2-1	Name(s)	LUZZATTO, Edgar; LUZZATTO, Esther; HACKMEY, Michal; FUERST, Zadok; PYERNIK, Moshe; MANZUROLA, Emanuel; SERUYA, Yehuda; CHECHIK, Haim; BEN-HORIN, Hevion; RUTMAN, Avraham; PRICE, Eyal; SHALEV, Ronit; HACKMEY, Miriam
V	Designation of States	
V-1	Regional Patent (other kinds of protection or treatment, if any, are specified between parentheses after the designation(s) concerned)	AP: GH GM KE LS MW SD SL SZ TZ UG ZW and any other State which is a Contracting State of the Harare Protocol and of the PCT EA: AM AZ BY KG KZ MD RU TJ TM and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT EP: AT BE CH&LI CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE and any other State which is a Contracting State of the European Patent Convention and of the PCT OA: BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG and any other State which is a member State of OAPI and a Contracting State of the PCT
V-2	National Patent (other kinds of protection or treatment, if any, are specified between parentheses after the designation(s) concerned)	AE AL AM AT AU AZ BA BB BG BR BY CA CH&LI CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
V-3	National Patent (States which have become party to the PCT after the issuance of this version of EASY)	DZ

## PCT REQUEST

Original (for SUBMISSION) - printed on 14.03.2000 05:04:55 PM

V-5	Precautionary Designation Statement In addition to the designations made under items V-1, V-2 and V-3, the applicant also makes under Rule 4.9(b) all designations which would be permitted under the PCT except any designation(s) of the State(s) indicated under item V-6 below. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit.	
V-6	Exclusion(s) from precautionary designations	NONE
VI-1	Priority claim of earlier national application	15 March 1999 (15.03.1999)
VI-1-1	Filing date	129003
VI-1-2	Number	IL
VI-1-3	Country	
VI-2	Priority document request The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) identified above as item(s);	VI-1
VII-1	International Searching Authority Chosen	European Patent Office (EPO) (ISA/EP)
VIII	Check list	
VIII-1	Request	4
VIII-2	Description	25
VIII-3	Claims	3
VIII-4	Abstract	1
VIII-5	Drawings	11
VIII-7	TOTAL	44
VIII-8	Accompanying items	paper document(s) attached
VIII-16	Fee calculation sheet	✓
VIII-18	Figure of the drawings which should accompany the abstract	
VIII-19	Language of filing of the international application	English
IX-1	Signature of applicant or agent	Moshe Pyernik
IX-1-1	Name (LAST, First)	PYERNIK, Moshe

FOR RECEIVING OFFICE USE ONLY

10-1	Date of actual receipt of the purported international application	
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## PCT REQUEST

Original (for SUBMISSION) - printed on 14.03.2000 05:04:55 PM

10-2	Drawings:	
10-2-1	Received	
10-2-2	Not received	
10-3	Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application	
10-4	Date of timely receipt of the required corrections under PCT Article 11(2)	
10-5	International Searching Authority	ISA/EP
10-6	Transmittal of search copy delayed until search fee is paid	

## FOR INTERNATIONAL BUREAU USE ONLY

11-1	Date of receipt of the record copy by the International Bureau	
------	----------------------------------------------------------------	--

## DEMAND

under Article 31 of the Patent Cooperation Treaty:

The undersigned requests that the international application specified below be the subject of international preliminary examination according to the Patent Cooperation Treaty.

For International Preliminary Examining Authority use only

Identification of IPEA		Date of receipt of DEMAND	
<b>Box No. I IDENTIFICATION OF THE INTERNATIONAL APPLICATION</b>		Applicant's or agent's file reference 7051/WO/99+	
International application No. PCT/IL00/00158	International filing date (day/month/year) 14 March 2000 (14.03.2000)	(Earliest) Priority date (day/month/year) 15 March 1999 (15.03.99)	
Title of invention COLORIMETRIC DETECTION METHOD			
<b>Box No. II APPLICANT(S)</b>			
Name and address:  BEN-GURION UNIVERSITY OF THE NEGEV Research & Development Authority P.O. Box 653 Beer-Sheva 84105 Israel		Telephone No.:	
		Facsimile No.:	
		Teleprinter No.:	
State (i.e. country) of nationality: IL		State (i.e. country) of residence: IL	
Name and address:  JELINEK, Raz 4 Brosh Street Omer 84965 Israel			
State (i.e. country) of nationality: IL		State (i.e. country) of residence: IL	
Name and address:			
State (i.e. country) of nationality:		State (i.e. country) of residence:	
<input type="checkbox"/> Further applicants are indicated on a continuation sheet.			

**Box No. III AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE**

The following person is ☒ agent ☐ common representative

and ☒ has been appointed earlier and represents the applicant(s) also for international preliminary examination.

☐ is hereby appointed and any earlier appointment of (an) agent(s)/common representative is hereby revoked.

☐ is hereby appointed, specifically for the procedure before the International Preliminary Examining Authority, in addition to the agent(s)/common representative appointed earlier.

Name and address:

LUZZATTO, Kfir; LUZZATTO, Edgar; LUZZATTO, Esther; HACKMEY, Michal,  
FUERST, Zadok; PYERNIK, Moshe; MANZUROLA, Emanuel;  
SERUYA, Yehuda; PRICE, Eyal; SHALEV, Ronit; HACKMEY, Miriam;  
BEN-HORIN, Hevion; RUTMAN, Avraham; CHECHIK, Haim  
LUZZATTO & LUZZATTO  
P.O.Box 5352  
Beer-Sheva 84 152  
Israel

Telephone No.:

(972-7) 6497-871

Facsimile No.:

(972-7) 6497-125

Teleprinter No.:

☐ Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

**Box No. IV STATEMENT CONCERNING AMENDMENTS**

The applicant wishes the International Preliminary Examining Authority\*

(i) ☒ to start the international preliminary examination on the basis of the international application as originally filed.

(ii) ☐ to take into account the amendments under Article 34 of

☐ the description (amendments attached).

☐ the claims (amendments attached).

☐ the drawings (amendments attached).

(iii) ☐ to take into account any amendments of the claims under Article 19 filed with the International Bureau (a copy is attached).

(iv) ☐ to disregard any amendments of the claims made under Article 19 and to consider them as reversed.

(v) ☐ to postpone the start of the international preliminary examination until the expiration of 20 months from the priority date unless that Authority receives a copy of any amendments made under Article 19 or a notice from the applicant that he does not wish to make such amendments (Rule 69.1(d)).

\* Where no check-box is marked, international preliminary examination will start on the basis of the international application as originally filed or, where a copy of amendments to the claims under Article 19 and/or amendments to the international application under Article 34 are received by the International Preliminary Examining Authority before it has begun to draw up a written opinion or the international preliminary examination report, as so amended.

**Box No. V ELECTION OF STATES**

☒ The applicant hereby elects all eligible States except .....

.....

.....

.....

**Box No. VI CHECK LIST**

The demand is accompanied by the following documents for the purposes of international preliminary examination:

For international Preliminary  
Examining Authority use only

- |                                                    |   |        |
|----------------------------------------------------|---|--------|
| 1. amendments under Article 34                     | : | sheets |
| description                                        | : | sheets |
| claims                                             | : | sheets |
| drawings                                           | : | sheets |
| 2. letter accompanying amendments under Article 34 | : | sheets |
| 3. copy of amendments under Article 19             | : | sheets |
| 4. copy of statement under Article 19              | : | sheets |
| 5. other ( <i>specify</i> ):                       | : | sheets |

received

not received

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

The demand is also accompanied by the item(s) marked below:

- |                                                                          |                                                                                                |
|--------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| 1. <input checked="" type="checkbox"/> separate signed power of attorney | 4. <input checked="" type="checkbox"/> fee calculation sheet                                   |
| 2. <input checked="" type="checkbox"/> copy of general power of attorney | 5. <input checked="" type="checkbox"/> other ( <i>specify</i> ): notification of bank transfer |
| 3. <input type="checkbox"/> statement explaining lack of signature       |                                                                                                |

**Box No. VII SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE**


Haim Chechik

For International Preliminary Examining Authority use only

1. Date of actual receipt of DEMAND:

2. Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b):

3. ☐ The date of receipt of the demand is AFTER the expiration of 19 months from the priority date and item 4 or 5, below, does not apply.

☐

The applicant has been informed accordingly.

4. ☐ The date of receipt of the demand is WITHIN the period of 19 months from the priority date as extended by virtue of Rule 80.5.

5. ☐ Although the date of receipt of the demand is after the expiration of 19 months from the priority date, the delay in arrival is EXCUSED pursuant to Rule 82.

For International Bureau use only

Demand received from IPEA on:



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

14

Applicant's or agent's file reference 7051/WO/99+	<b>FOR FURTHER ACTION</b>		See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/IL00/00158	International filing date (day/month/year) 14/03/2000	Priority date (day/month/year) 15/03/1999	
International Patent Classification (IPC) or national classification and IPC G01N33/50			
Applicant BEN-GURION UNIVERSITY OF THE NEGEV et al.			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 8 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 5 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☒ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand  05/10/2000	Date of completion of this report  29.06.2001
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Goetz, M  Telephone No. +49 89 2399 8697



# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/IL00/00158

## I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*):

### Description, pages:

3-25	as originally filed	
1,2	with telefax of	14/05/2001

### Claims, No.:

1-13	with telefax of	14/05/2001
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### Drawings, sheets:

1/11-11/11	as originally filed
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2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/IL00/00158

- ☐ the description,      pages:
- ☐ the claims,      Nos.:
- ☐ the drawings,      sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):  
*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

### III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application.

☒ claims Nos. 11 - 13.

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for the said claims Nos. 11 - 13.

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the standard.

☐ the computer readable form has not been furnished or does not comply with the standard.

### IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/IL00/00158

- ☐ restricted the claims.
  - ☐ paid additional fees.
  - ☐ paid additional fees under protest.
  - ☐ neither restricted nor paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
- ☐ complied with.
  - ☒ not complied with for the following reasons:  
**see separate sheet**
4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:
- ☐ all parts.
  - ☒ the parts relating to claims Nos. 1 - 10.

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Yes:	Claims	2, 3, 5 - 8, 10
	No:	Claims	1, 4, 9
Inventive step (IS)	Yes:	Claims	2, 3
	No:	Claims	1, 4 - 10
Industrial applicability (IA)	Yes:	Claims	1 - 10
	No:	Claims	

### 2. Citations and explanations **see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/IL00/00158

**Re Item III**

**Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

Based on an objection as to lack of unity of the invention during the International Search Phase, no Search Report has been established for the subject-matter of claims 11 - 13.

Hence, no opinion with regard to novelty, inventive step and industrial applicability can be formulated for these claims.

**Re Item IV**

**Lack of unity of invention**

1. The IPEA agrees with the objection already put forward by the ISA as to lack of unity (Rule 13 PCT), the reasons for the objection being as follows:
  - A. Claims 1 - 10: Detection methods wherein the technical contribution resides in:
    - the analyte, which must be chemically non-reactive with lipids or the matrix-forming polymer, causing a non-chemical change in the polymeric matrix (by using means enabling such change).
  - B. Claims 11 - 13: Evaluation methods wherein the technical contribution resides in:
    - contacting native peptides and one or more analogues with a biochromatic matrix/lipids and comparing the resulting colour change.

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/IL00/00158

2. They are not so linked as to form a single general inventive concept (Rule 13.1 PCT) for the following reasons:

The technical contribution to the state of the art in claims 11 - 13 is the comparison of results obtained with two particular analytes (native peptide and analogue thereof) in a generalized biochromatic matrix/lipid system and is different from that of claims 1 - 10, where the essential technical element is the particular mode of action of generalized analytes in a particular biochromatic matrix/lipid system (by using suitable means to enable the analyte to cause a non-chemical change etc.).

**Re Item V**

**Reasoned statement under Art. 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Reference is made to the following document/s/:

**D1 WO9727316**

**D2: WO9839632**

2. Fig. 1 and page 11/lines 28 - 36, page 13/lines 5 - 24 and 34 - 37, page 14/line 34 - page 15/line 22 of **D1** disclose a bilayer comprising a polymeric backbone composed of octadecyltrichlorosilane and a polydiacetylene lipid layer having a sialic acid moiety attached thereto via a linker element. This corresponds to the polymeric matrix / lipid / enabling means configuration of present claim 1.

In Examples 1 and 2 of **D1**, the colour transition of the bilayer from blue to red is used for the detection of Influenza Virus Binding.

Taking into account that terms such as "ligand" and "receptor" are commonly widely interpreted, the method according to **D1** anticipates the subject-matter of present broadly worded claims 1 and 4, which do not therefore meet the requirements according to Art. 33(2) PCT.

Additional explanation: the Applicant argues that the method according to **D1** differs from the presently claimed method, in that **D1** relates to a bilayer system, having polymerized lipids and receptors or ligands coupled to the lipidic components.

Whilst such technical differences may indeed exist between **D1** and present claim 1, the wording of the latter does not reflect said differences. The currently used wording of claim 1 does not suitably distinguish its subject-matter from **D1**.

- 2.1. **D2** discloses a mixed film comprised of polydiacetylene (PDA) and NHS-PDA, the former constituting the polymeric matrix and the latter representing the lipid fraction (it should be noted that in the polymeric films considered in the present application, the polymeric matrix is also composed of lipid components; hence a difference between the two elements is difficult to draw); hexokinase is attached to the NHS- PDA lipid component as means enabling an analyte to cause a non-chemical change in the polymeric matrix (see D2, page 66/line 23 - page 68/line 4).

These films were used for the detection of glucose, see D2, page 78/line 16 - page 79/line 9, making use of the colorimetric change associated with modifications in the polymeric backbone.

The method according to **D2** anticipates the subject-matter of present broadly worded claims 1 and 9, which do not therefore meet the requirements according to Art. 33(2) PCT.

Additional explanation: the Applicant argues that the method according to **D2** differs from the presently claimed method, in that **D2** requires different components of the detection system, further requires enzymatic reactions in the detection of biochemicals, and involves complicated coupling steps.

Whilst such technical differences may indeed exist between **D2** and present claim 1, the wording of the latter does not reflect said differences. The currently used wording of claim 1 does not suitably distinguish its subject-matter from **D2**.

3. Antibodies and antigens are conventionally used ligands and proteinaceous material is a known type analyte in the present technical field, see e.g. **D1**, claim 12, and **D2**, page 38/lines 6 - 11 and page 39/lines 25 - 31.

The subject-matter of claims 5 - 8, directed to the use of such ligands, does not therefore meet the requirements according to Art. 33(3) PCT; the said claims could only be considered to involve an inventive step if they were dependent upon an inventive independent claim.

- 3.1. The particular lipid components given in claim 10 do not apparently entail any unexpected or particularly favourable effect; a selection between the said lipids, known per se in the technical fields, cannot currently be considered to form a basis for acknowledgement of an inventive step.

Claim 10 does not therefore meet the requirements according to Art. 33(3) PCT.

4. The subject-matter of dependent claims 2 and 3 does not appear to be disclosed or suggested by either **D1** or **D2**; hence, the said claims meet the requirements according to Art. 33(2) and (3) PCT.



# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>7051/W0/99+</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/IL 00/ 00158</b>	International filing date (day/month/year) <b>14/03/2000</b>	(Earliest) Priority Date (day/month/year) <b>15/03/1999</b>
Applicant <b>BEN-GURION UNIVERSITY OF THE NEGEV et al.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

### 1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☒ furnished subsequently to this Authority in written form.

☒ furnished subsequently to this Authority in computer readable form.

☒ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☒ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☒ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. 1

☐ as suggested by the applicant.

☒ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IL 00/00158

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-10

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-10

Detection methods wherein the technical contribution resides in:

- the analyte causing a non-chemical change in the polymeric matrix (by using means enabling such change).

2. Claims: 11 - 13

Evaluation methods wherein the technical contribution resides in:

- contacting native peptides and one or more analogues with a biochromatic matrix/lipids and comparing the resulting color change.

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/IL 00/00158

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 G01N33/92 G01N33/543

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97 27316 A (UNIV CALIFORNIA ;CHARYCH DEBORAH (US); NAGY JOHN (US)) 31 July 1997 (1997-07-31) page 11, line 28-36 page 13, line 5-24 page 5, line 34-37 page 14, line 34 -page 15, line 22 claim 12; figure 1; examples 1,2 ---	1,4-10
X	WO 98 39632 A (UNIV CALIFORNIA) 11 September 1998 (1998-09-11) page 66, line 23 -page 68, line 4 -----	1,5-9

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*G\* document member of the same patent family

Date of the actual completion of the international search

25 October 2000

Date of mailing of the international search report

10.01.01

Name and mailing address of the ISA

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Authorized officer

Goetz, M

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

IL 00/00158

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9727316 A	31-07-1997	US 6001556 A AU 715973 B AU 1842297 A BR 9707207 A CA 2244098 A EP 0883690 A JP 2000506378 T	14-12-1999 10-02-2000 20-08-1997 20-07-1999 31-07-1997 16-12-1998 30-05-2000
WO 9839632 A	11-09-1998	AU 6343498 A EP 0965033 A	22-09-1998 22-12-1999

**PCT**WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>7</sup> :</b> <b>G01N 33/50</b>	<b>A2</b>	<b>(11) International Publication Number:</b> <b>WO 00/55623</b> <b>(43) International Publication Date:</b> 21 September 2000 (21.09.00)
<b>(21) International Application Number:</b> PCT/IL00/00158 <b>(22) International Filing Date:</b> 14 March 2000 (14.03.00)  <b>(30) Priority Data:</b> 129003 15 March 1999 (15.03.99) IL  <b>(71) Applicant (for all designated States except US):</b> BEN-GURION UNIVERSITY OF THE NEGEV [IL/IL]; Research & Development Authority, P.O. Box 653, 84105 Beer-Sheva (IL).  <b>(72) Inventor; and</b> <b>(75) Inventor/Applicant (for US only):</b> JELINEK, Raz [IL/IL]; Brosh Street 4, 84965 Omer (IL).  <b>(74) Agents:</b> LUZZATTO, Kfir et al.; Luzzatto & Luzzatto, P.O. Box 5352, 84152 Beer-Sheva (IL).		<b>(81) Designated States:</b> AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>Without international search report and to be republished upon receipt of that report.</i>
<b>(54) Title:</b> COLORIMETRIC DETECTION METHOD  <b>(57) Abstract</b>  A method for detecting the presence of an analyte in a sample, said analyte being chemically non-reactive with lipids or with a polymer having an absorption band which may be shifted from a first wavelength in the visible region to a second wavelength in a visible region, which comprises: a) providing a polymeric matrix comprising said lipids and said polymer; b) introducing into said sample or into said polymeric matrix means enabling said analyte to cause a non-chemical change in said polymeric matrix; and c) contacting the sample with the polymeric matrix and observing a color transition of the matrix, indicating the presence of the analyte.		

RECEIVED BY  
ART 34 AMDTColorimetric Detection MethodField of the Invention

The present invention relates to a method for the detection of species in a sample. More specifically, the present invention provides a method for detecting an analyte in a liquid sample by a color transition occurring in the sample.

Background of the Invention

Various methods are known in the art for the detection of chemical and biological species in a sample. The methods that are frequently used in industrial or medical applications are based on conventional electrochemical and spectroscopic means. Recently, the art has been acknowledging the potential of polymers characterized by an absorption band which may be shifted from a first wavelength in the visible region to a second wavelength in a visible region, as possible detectors of chemical species in a sample. The color change that said polymers exhibit by virtue of their backbone being structurally perturbed in the presence of the analyte of interest, allows the identification of said analyte in the sample.

Attempts have been made to expand the utility of said polymers by providing particles composed therefrom, together with materials that can be chemically modified in the presence of the analyte. The chemical modification of said materials causes the perturbation in the polymer backbone, resulting in a color change, which indicates the presence of the analyte. WO 98/39632 discloses a method for detecting the presence of an analyte based on a biopolymeric material containing a polymer having the properties described above, associated with a lipid. The color change is induced by the

analyte chemically reacting with the lipid, for example, by an enzyme causing a lipid cleavage.

It is an object of the present invention to provide a method for detecting analytes that cannot react chemically with said polymers or lipids.

### Summary of the Invention

It has been surprisingly found by the inventors that an aggregate particle comprising lipids and a polymer, said polymer having an absorption band which may be shifted from a first wavelength in the visible region to a second wavelength in the visible region, can be used to detect analytes without a chemical reaction occurring between the analyte and said lipids or said polymer. When brought into contact with a sample containing the analyte, said aggregate particle exhibits a color transition signaling the presence of the analyte, albeit the fact that the analyte does not react chemically with the components of the polymeric matrix. Hereinafter, this aggregate particle will be referred to as a polymeric matrix comprising lipids.

In one aspect, the present invention provides a method for detecting the presence of an analyte in a sample, said analyte being chemically non-reactive with lipids or with a polymer having an absorption band which may be shifted from a first wavelength in the visible region to a second wavelength in the visible region, which comprises:

- a) providing a polymeric matrix comprising said lipids and said polymer;
- b) introducing into said sample or into said polymeric matrix means enabling said analyte to cause a non-chemical change in said polymeric matrix; and
- c) contacting the sample with the polymeric matrix and observing a color transition of the matrix, indicating the presence of the analyte.



CLAIMS

- 1) A method for detecting the presence of an analyte in a sample, said analyte being chemically non-reactive with lipids or with a polymer having an absorption band which may be shifted from a first wavelength in the visible region to a second wavelength in the visible region, which comprises:
  - a) providing a polymeric matrix comprising said lipids and said polymer;
  - b) introducing into said sample or into said polymeric matrix means enabling said analyte to cause a non-chemical change in said polymeric matrix; and
  - c) contacting the sample with the polymeric matrix and observing a color transition of the matrix, indicating the presence of the analyte.
- 2) A method according to claim 1, wherein the analyte is an ion and the means allowing said ion to cause a non-chemical change in the polymeric matrix are ionophores.
- 3) A method according to claim 2 wherein the ion is a metal cation.
- 4) A method according to claim 1, wherein the analyte is a biological ligand and the means allowing said ligand to cause a non-chemical change in the polymeric matrix are provided by a receptor having the capability to bind said ligand, said receptor being linked to a spacer arm located within the lipid domain of said matrix.
- 5) A method according to claim 4, wherein the biological ligand is selected from the group consisting of antibodies, antigens and epitopes and the spacer arm is a peptide or one or more alkyl chains.

- 6) A method according to claim 1, wherein the analyte is a peptide.
- 7) A method according to claim 6, wherein the analyte is a short membrane peptide containing no more than 50 amino acids.
- 8) A method according to claim 6, wherein the analyte is a membrane protein.
- 9) A method according to claim 1, wherein the polymer is polydiacetylene obtained by polymerization of a monomer selected from the group consisting of tricosadiynoic acid, tricosadiynoic methyl esters, pentacosadiynoic acid and pentacosadiynoic methyl esters.
- 10) A polymer according to claim 1, wherein the lipids are selected from the group consisting of phospholipids, sphingolipids, ceramides and glycolipids.
- 11) A method for distinguishing between a native peptide and an analogue thereof, which comprises the steps of:
- a) providing a polymeric matrix comprising lipids and a polymer, said polymer having an absorption band which may be shifted from a first wavelength in the visible region to a second wavelength in a visible region;
  - b) contacting the polymeric matrix with a sample suspected of containing said peptide or an analogue thereof, and comparing the color observed with the color expected in the presence of the native peptide, to determine whether the native peptide or an analogue thereof is present in the sample.
- 12) A method for distinguishing between a first analogue of a native peptide and a second analogue thereof, which comprises the steps of:

- a) providing a polymeric matrix comprising lipids and a polymer, said polymer having an absorption band which may be shifted from a first wavelength in the visible region to a second wavelength in a visible region;
- b) contacting the polymeric matrix with a sample suspected of containing said first analogue or said second analogue, and comparing the color observed with the color expected in the presence of said first analogue or said second analogue, to determine which analogue is present in the sample.

13) A method for the evaluation of the biological activity of an analogue of a native peptide, which comprises the steps of:

- a) providing a polymeric matrix comprising lipids and a polymer, said polymer having an absorption band which may be shifted from a first wavelength in the visible region to a second wavelength in a visible region;
- b) contacting the polymeric matrix with a sample containing said peptide analogue, and comparing the color observed with the color expected in the presence of said native peptide;
- c) assessing the difference between the color observed and the color expected, to evaluate the similarity between the biological activity of said analogue and said peptide in membrane-related system.